

kommt häufiger als die letztere vor und scheut das direkte Sonnenlicht nicht, während die breitlappige Form einen etwas schattigen Standort bevorzugt. In Bezug auf die innere Morphologie und Reaktion stimmen die beiden Formen vollständig überein. Nach einer noch nicht veröffentlichten, chemischen Untersuchung von ASAHINA und Mitarbeiter enthält die Flechte Atranorin und Lobarsäure, welchem sich die Reaktion (Th. K+gelb, Mark K—, KC+ vorübergehend rot) im Einklang bringen lässt.

Glücklicherweise habe ich in diesem Sommer einige fruchtende Exemplare gesammelt, die alle zur breitlappigen Form gehörten. Die Apothecien sitzen am Rande der Blätter, einzeln oder gehäuft zu zwei bis vier; sind scheibenförmig, braun, ca 1 mm breit. Hymenium ca 70μ breit, Hypothecium farblos, ca 70μ breit. Askus 8-sporig, Sporen länglich, farblos, 4-zellig, $17-23 \times 4-5\mu$.

Errata 正 誤

October-Hefte (Bd. XII), Seite 689, 14^{te} Zeile von unten lies

PD+ statt PD—.

十月號 689 頁第 14 行目 (下ヨリ) PD— ヲ PD+ トス。

Kuehneola of Japan

By

Naohide HIRATSUKA

平塚直秀: 日本産「キユウネオラ」属菌

Since the genus *Kuehneola* was founded by MAGNUS (1898) with *Kuehneola albida* (*K. Uredines* ARTH.) as the type species, there are about ten species of the genus have been described up to the present. Among which the three species; *Kuehneola japonica* DIET., *K. Rosæ* SAWADA and *K. malvicola* ARTH. have been found in our country. Besides them, the two species, *Kuehneola Callicarpæ* H. SYD. and *K. Uredines* (LINK) ARTH. are now added by the writer to the mycological flora of Japan, and *Kuehneola Rosæ* SAWADA is treated as a synonym of *Kuehneola japonica* DIET. Therefore, the total number of species in our country is four.

Kuehneola MAGNUS in Bot. Centralbl. LXXIV, p. 169, 1898; ARTHUR in N. Amer. Fl. VII, p. 184, p. p.; Manual of the rusts in United States and Canada, p. 93, 1934; P. & H. SYDOW, Monogr. Ured. III, p. 313, p.p.

Key to species

Uredospores present.

Teleutospores thickened at apex ($3\sim 7\mu$). On Rosaceae (*Rubus*).

1. *Kuehneola Uredines* (LINK) ARTH.

Teleutospores slightly or not thickened at apex.

On Malvaceae (*Malvastrum*).

2. *Kuehneola malvicola* ARTH.

On Verbenaceae (*Callicarpa*).

3. *Kuehneola Callicarpæ* H. SYD.

Uredospores absent.

Teleutospores with uniformly thin walls. On Rosaceae (*Rosa*).

4. *Kuehneola japonica* DIET.

1. ***Kuehneola Uredines*** (LINK) ARTHUR in Résult. Sci. Congr. Internat. Bot. Vienne (1905), p. 342, 1906; N. Amer. Fl. VII, p. 186, 1912; Manual of the rusts in United States and Canada, p. 94 & fig. 123.

Syn. *Oidium Uredines* LINK, Sp. Pl. I, p. 123, 1824.

Chrysomyxa albida KÜHN in Bot. Centralbl. XVI, p. 154, 1883.

Phragmidium albidum LUDWIG in Centralbl. f. Bakt. III, p. 762, 1887; Bot. Centralbl. XXXVII, p. 413, 1889; BUBAK, Rostpilze Böhmens, p. 169; FRISCHER, Ured. Schw. p. 415.

Phragmidium albidum LAGERHEIM in Mitth. Bad. Bot. Ver. (1888), p. 44, 1888.

Coleosporium Rubi ELLIS et HOLWAY in SACCARDO, Syll. Fung. VII, p. 759, 1888.

Kuehneola albida MAGNUS in Bot. Centralbl. LXXIV, p. 169, 1898; GROVE, Brit. Rust Fungi, p. 300 & fig. 227; P. & H. SYDOW, Monogr. Ured. III, p. 315 & pl. XIII, fig. 133.

Hab. On *Rubus* sp. (cultivated).

Korea:—Prov. Keiki: Seiryôri (Aug. 18, 1934. HIRATSUKA, f.).

Distrib. Europe, North America and Japan (*Korea*).

This species is a new addition to the mycological flora of our country. The

characters of this fungus on the Japanese specimen are as follows: Secondary uredosori hypophyllous, scattered, round, small, early naked, powdery, pale yellow fading to whitish; uredospores subglobose, obovate or ellipsoidal, $17.5\sim 26 \times 15\sim 20 \mu$; episporer closely verrucose-echinulate, uniformly thin, $1\sim 1.5 \mu$ thick, nearly colourless; paraphyses wanting. Teleutosori hypophyllous, irregularly scattered or thickly scattered over the whole surface of the leaf, early naked, pulvinate, white; teleutospores cylindrical or cylindrical clavate, $5\sim 12$ celled, each cell $17\sim 40 \times 15\sim 24 \mu$; episporer nearly colourless, thin ($1.2\sim 2 \mu$), thickened at the apex of the apical cell ($3\sim 7 \mu$), smooth; pedicel colourless, very short.

2. **Kuehneola malvicola** ARTHUR in N. Amer. Fl. VII, p. 187, 1912; Manual of the rusts in United States and Canada, p. 94 & fig. 124; P. & H. SYDOW, Monogr. Ured. III, p. 320. (HIRATSUKA, f. in Jour. Jap. Bot. X, p. 470, 1934; HIRATSUKA, f. & HASHIOKA in Bot. Mag. Tokyo, XLIX, p. 22, 1935).

Syn. *Uredo malvicola* SPEGAZZINI in Anal. Soc. Ci. Argent. XVII, p. 124, 1884; SACCARDO, Syll. Fung. VII, p. 854.

Uredo Hibisci P. et H. SYDOW in Hedwigia, XL, p. (128), 1901; SACCARDO, Syll. Fung. XVII, p. 445.

Hab. On *Malvastrum coromandelinum* GARDKE (*Enoki-aoi*).

Formosa:—Prov. Takao: Garanbi (Jan. 5, 1934, Y. HASHIOKA).

Distrib. North America, Central America, West Indies, South America, Philippines and Japan (*Formosa*).

The writer has not seen the teleutospores of this fungus in the Japanese specimen.

3. **Kuehneola Callicarpæ** H. SYDOW in H. SYDOW & PETRAK in Ann. Myc. XXVI, p. 420, 1928.

Hab. On *Callicarpa japonica* THUNB. var. *luxurians* REHD. (*Ô-murasaki-shikibu*).

Kiushû:—Prov. Ôsumi: Yakushima (Dec. 31, 1933, K. IDE).

Distrib. Philippines and Japan (*Kiushû*).

This is a new addition to the mycological flora of Japan. The general

characters of the present fungus are as follows :—Spermogonia epiphyllous, minute, subcuticular, $75\sim110\mu$ across, $45\sim65\mu$ high. Teleutosori mostly hypophyllous, irregularly scattered or grouped, small, early naked, at first brown, then pale yellowish brown in colour, subpulverulent; teleutospores long, up to 200μ , $3\sim12$ celled, each cell $18\sim36\times17\sim24\mu$; epispore uniformly thin, $1\sim1.5\mu$, pale yellowish brown in colour, smooth. Often some uredospores intermixed in teleutosori, uredospores subglobose or ellipsoidal, $24\sim38\times20\sim24\mu$; epispore rather thick, $3\sim4.5\mu$, sparsely echinulate.

4. **Kuehneola japonica** DIETEL in Ann. Myc. X, p. 205, 1912; P. & H. Sydow, Monogr. Ured. III, p. 318 & pl. XIII, fig. 134. (HIRATSUKA, f. in Jour. Jap. Bot. X, p. 131, 1934; XI, p. 279, 1935; HIRATSUKA, f. & HASHIOKA in Bot. Mag. Tokyo, XLIX, p. 22, 1935; HIRATSUKA, f. & YOSHINAGA in Mem. Tottori Agric. Coll. III, p. 275, 1935; SAWADA, Descript. Cat. Formosan Fung. IV, p. 72, 1928; YOSHINAGA & HIRATSUKA, f. in Bot. Mag. Tokyo, XLIV, p. 650, 1930).

Syn. *Phragmidium japonicum* DIETEL in ENGL. Bot. Jahrb. XXVIII, p. 567 & pl. VII, fig. 8, 1899; SACCARDO, Syll. Fung. XVI, p. 316. (DIETEL in Hedwigia, XLIV, p. 127, 1905; HENNINGS in ENGL. Bot. Jahrb. XXXI, p. 732, 1902; KASAI in Transact. Sapporo Nat. Hist. Soc. III, p. 31 & pl. I, fig. 4, 1910; KUSANO in Bot. Mag. Tokyo, XVI, p. [200], 1902; YOSHINAGA in Bot. Mag. Tokyo, XVI, p. [3], 1902).

Kuehneola Rosæ SAWADA in Transact. Sapporo Nat. Hist. Soc. VII, p. 40 & text-fig. 1~3, 1918. (HIRATSUKA, f. & HASHIOKA in Bot. Mag. Tokyo, XLIX, p. 22, 1935; SAWADA, Descript. Cat. Formosan Fung. I, p. 376 & pl. XI, fig. 1~6, 1919).

Hab. On *Rosa chinensis* JACQ. subsp. *indica* KOEHNE (*R. indica* L. var. *formosana* HAYATA) (*Kôshin bara*) (cultivated).

Formosa :—Prov. Taihoku : Taihoku (Dec. 3, 1933, Jan. 11 & Feb. 5, 1935 & June 1, 1936, Y. HASHIOKA).

On *Rosa fujisanensis* MAK. (*R. Lucie* var. *fujisanensis* MAK.) (*Fujiibara*).

Shikoku :—Prov. Tosa : Sasagamine~Kamuri-yama (Aug. 21, 1933, T. YOSHINAGA).

On *Rosa Onoei* MAK. (*Yabu-ibara*).

Shikoku :—Prov. Tosa : Mt. Shiraga (Aug. 9, 1934, T. YOSHINAGA).

On *Rosa polyantha* SIEB. et ZUCC. var. *gervina* NAKAI (*R. multiflora* THUNB.) (*No-ibara*).

Honshû :—Prov. Idzu : Mt. Amagi (Nov., 1929, K. HARA). Prov. Ômi : Mt. Ibuki (Oct. 17, 1925, K. TOGASHI). Prov. Inaba : Omokage-mura (Oct. 6, 1930, HIRATSUKA, f.); Inabayama near Tottori (Oct. 11, 1929, HIRATSUKA, f.). Prov. Hôki : Mt. Daisen (July 1, 1924, K. TOGASHI); Mitokusan (Sept. 22, M. YOSHIDA).

Shikoku :—Prov. Tosa : Higashiyama-mura (Nov. 23, 1934, T. MORIMOTO); Usa-machi (April 22, 1934, T. YOSHINAGA); Kôchi-shi (Nov., 1933, M. KAMIMURA); Mt. Yokogura T. YOSHINAGA Prov. Awa : Fukui-mura (Nov. 25, 1934, T. YOSHINAGA).

On *Rosa laevigata* MICHX. (*Naniwa-ibara*).

Formosa :—Prov. Taihoku : Heirin (Aug. 8, 1933, T. Itô); Shinten (Dec. 4, 1932, Y. HASHIOKA); Shinkô (Aug. 17, 1933, Y. HASHIOKA).

On *Rosa taiwanensis* NAKAI (*Taiwan-ibara*).

Formosa :—Prov. Taihoku : Mt. Kan-non (Dec. 25, 1933, Y. HASHIOKA); Chokutan (Dec. 18, 1932, Y. HASHIOKA).

On *Rosa Wichurariana* CREP. (*R. Lucie* FRANCH. et SAV.) (*Teriha-noibara*).

Honshû :—Prov. Idzu : Ochiai (S. KUSANO). Prov. Inaba : Tottori (Nov. 1, 1931, Y. HASHIOKA); Inabayama near Tottori (Nov. 27, 1930, HIRATSUKA, f.); Hakuto (Sept. 15, 1929, HIRATSUKA, f.); Uradomi July 24, 1932, Y. UEMURA); Shiomi-mura (May 4, 1930, HIRATSUKA, f.); Tajiri-mura (June 23, 1929, HIRATSUKA, f.); Fukube-mura (June 23, 1929, HIRATSUKA, f.).

Shikoku :—Prov. Tosa : Ônomi-mura (Nov. 2, 1934, A. ÔYAMA); Akiyama-mura (June, 1930, T. YOSHINAGA).

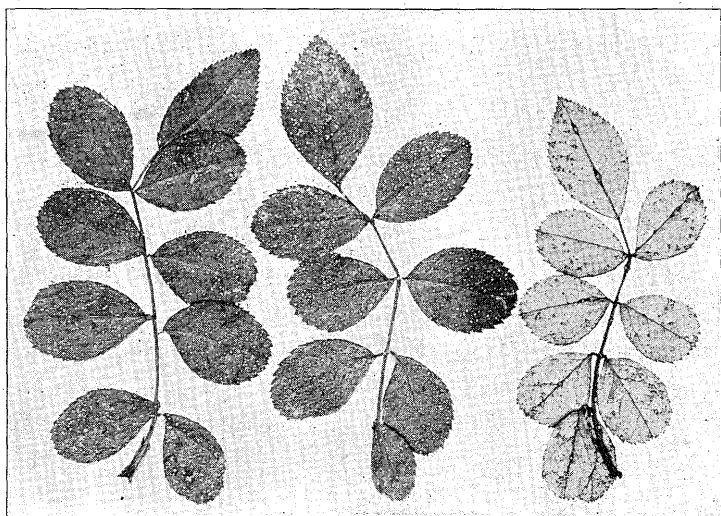
Kiushû :—Prov. Satsuma : Okikoshima (May 24, 1936, K. IDE).

On *Rosa* sp. (cultivated).

Honshû :—Prov. Inaba : Tottori (May 25, 1930 & Sept. 17, 1932, HIRATSUKA, f.).

Distrib. Philippines and Japan (*Honshû*, *Shikoku*, *Kiushû* and *Formosa*).

In 1899, DIETEL first described this fungus under the name *Phragmidium*



Text-fig. 1. Teleutosori of *Kuehneola japonica* DIET. on leaves of *Rosa Wichurariana* CREP. (Shiomi-mura, prov. Inaba, May, 1930, leg. HIRATSUKA, f.)

japonicum from a specimen on *Rosa Wichurariana* which was collected by S. KUSANO in Tokyo. Six years later, this species was transferred by DIETEL to the genus *Kuehneola*. Since then, *Kuehneola japonica* (*Phragmidium japonicum*) was recorded by the SYDOWS, HENNINGS, DIETEL, KASAI, YOSHINAGA, SYDOW & PETRAK⁽¹⁾, the writer and others on *Rosa fujisanensis*, *R. Onoei*, *R. polyantha* var. *genuina* (*R. multiflora*), *R. laevigata*, *R. philippinensis* MERR., *R. taiwanensis* and *R. Wichurariana* from Honshû, Shikoku, Formosa and the Philippines.

In 1918, SAWADA described a new species, *Kuehneola Rosæ* based upon a specimen on *Rosa indica* var. *formosana* (*R. chinensis* subsp. *indica*) which was collected in Taihoku, Formosa.

Careful examination and comparison with a large number of collections of the two species, *Kuehneola japonica* and *K. Rosæ*, failed to reveal any characters by which they could be definitely segregated into distinct species. Therefore, the writer has come to the conclusion that *Kuehneola Rosæ* SAWA-

(1) Ann. Myc. XXIX, p. 165 (1931).

DA should be treated as a synonym of *Kuehneola japonica* DIET.

In May 1935, the writer made inoculations with the sporidia of teleutospores of this fungus on *Rosa Wichurariana* on leaves of *Rosa acicularis* LINDL. var. *Gmelini* SCHNEID., *R. acicularis* var. *nipponensis* HOOK. f., *R. pendulina* AIT. (*R. alpina* L.), *R. polyantha* var. *genuina*, *R. rugosa* THUNB. and *R. Wichurariana*. Positive results were readily secured on the leaves of *Rosa polyantha* var. *genuina* and *R. Wichurariana*, while on the remaining plants inoculations were unsuccessful.

1. *Kuehneola Uredines* (LINK) ARTH. ~ 筆者ハ 1934 年 8 月、朝鮮京城府外清涼里總督府林業試験場構内デきいちご、1 種 (種名不詳) ノ葉上ニコノ銹菌ノ夏孢子・冬孢子兩時代ヲ發見採集シタ。我國領土内デハ最初ノ發見デアル。因ニ、同種ハ歐米二大陸ニ廣ク分布シテ居リ、*Kuehneola* 屬ノ基本種デアル。

2. *Kuehneola malvicola* ARTH. ~ 日本領土内デハ 1934 年 1 月、橋岡良夫氏ニヨツテ臺灣高雄州鶯鸞鼻デえのきあふひ上ニ其ノ夏孢子時代ヲ發見サレタノミデアル。同菌ハ北米南部・南米・西印度諸島、フィリッピン諸島ニ廣ク分布シテ居ル。

3. *Kuehneola Callicarpa* H. SYD. ~ 1933 年 12 月井手清治氏ガ大隅國屋久島デおほむらさきノ葉上ニ同菌ヲ發見採集サレタ。日本ニ於テ最初ノ發見デアル。因ニコノ種類ハ H. SYDOW 氏 (1928) ニヨツテフィリッピン諸島マニラ産ノ *Callicarpa formosana* ROLFE (ほうらいむらさき) 葉上ノ菌ニ基イテ命名記載サレタモノデ今日迄他地方ニ産スル事ハ未知デアツタ。

4. *Kuehneola japonica* DIET. ~ かうしんばら (栽培)・ふじいばら・やぶいばら・のいばら・なにはいばら・たいわんいばら・てりはのいばら等ニ寄生スル種類デ、我國領土内デハ本州中南部・四國・九州・臺灣ニ分布シテ居ル。1918 年澤田兼吉氏ハ臺灣臺北産ノ かうしんばら上ノ菌ヲ新種ト認定、*Kuehneola Rosae* SAWADA ト命名記載サレタガ、筆者ハ同種ト *Kuehneola japonica* トノ間ニ判然タル形態上ノ相異點ヲ見出シ得ズ、ヨツテ茲ニ前者ヲ後者ノ異名トシテ取扱ツタ。